По установленным параметрам была принята приточная установка RDH 800 К2. Расчетная стоимость приточной установки составляет 40620 Euro, отдельно приточного вентилятора –14275 Euro. Ввиду того, что рассматриваемое помещение характеризуется активным источником влаговыделений зеркала ванны бассейна, а вентиляция обеспечивает лишь допустимый диапазон параметров и не предназначена для поддержания оптимальных условий, можно судить о неспособности вентиляции поддерживать должные параметры влажностного режима.

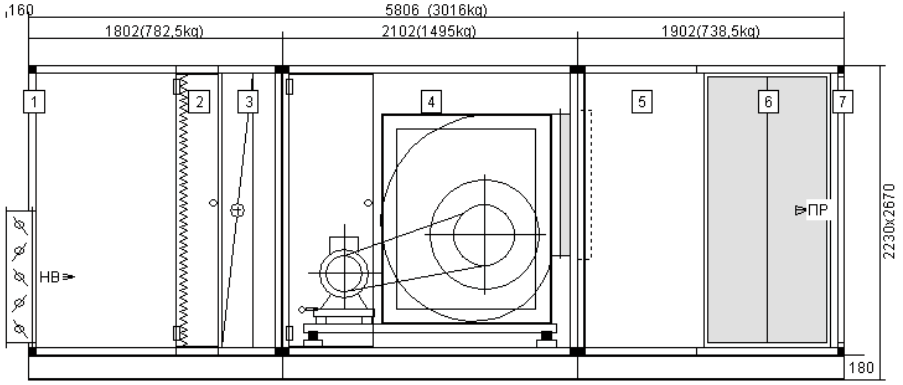

Рисунок 3 – Приточная установка RDH 800 К2

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WASTE TO ENERGY INCINERATION POWER PLANT

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Данная статья посвящена вопросам возможности выработки электроэнергии в процессе переработки твердых коммунальных отходов. Представлен проектстанции, осуществляющей данную переработку.

Incineration power plant is something that everyone use, but not everyone sure why they need to build it. Every year million tons of waste is thrown to landfills, and that is really unhealthy for people and harmful for nature. Our project contains the individual system that can get energy from rubbish without decent harm to nature. This project could save energy that is basically lays under us. This project will also gain a lot of useful materials and some gases that could be useful in big industries. That’s cheap and safe energy from nothing that will contribute a lot to future sustainable development of our

country and show Belarus in a new face, that everybody would like because Belarus is already doing a lot of things to be eco-friendly country. Green energy is not able to replace coal energy or any other power plants like atomic power plants but still it could reduce the use of them. Yet Waste to Energy power plants are able to find solutions to things like overloading landfills and pollution from landfills as well.

The main goal of all WtE technologies is to reduce waste generation, continuously followed by reuse and recycling. WtE incineration projects can be explained as a solution of recovery energy from any remaining non-recyclable MSW (municipal solid waste). This system is just kind of recovery system on how to get energy from MSW. They cannot solve existing waste problems alone but they can help a lot in a certain areas. WtE incineration is the process of burning waste in the presence of oxygen at temperatures of 850 C and above, combined with more sophisticated mechanisms to clean flue gas and utilize wastewater. One of the biggest profits of burning waste to energy is to reduce waste in landfills with getting energy on the other hand, moreover that controls disease spread from landfills and other sources. The profits are doubled in more populated areas as it can be located in urbanized zones. The additional benefit is getting energy from unneeded source. This form of incineration also decreases carbon emissions by offsetting the need for energy from fossil fuel sources and reduces methane generated from landfills if used as an alternative to landfilling. This system has its own cons too in the form of its costs of construction and some problems with some emissions from power plant itself. The main reasons to build WtE power plants is to control rising levels of waste and to control the spread of diseases. As population growth, there will be only more waste and pollution from landfills will increase with a huge haste. WtE incineration power plants has been developed to convert as much energy as possible. The world's leading power plants can convert 20-25% energy from waste. For example 40% of energy in Stockholm city, is produced by Swedish government from WtE power plants. Today, when the world is concerned about the impacts of climate change and energy system transitions, it is necessary to consider the option of using as much energy generated by WtE incineration as possible.

Waste is broadly classified into organic waste that is biodegradable and comes from either plants or animals, namely food and kitchen waste, as well as green waste such as pruned branches, and inorganic waste such as plastics, paper, glass, and metals. However, in terms of WtE incineration, MSW can be categorised into «combustible» or «non-combustible» wastes. Combustible waste consists of organic waste and other burnable waste such as paper, plastic, and textiles that were not separated at source as recyclable resources. Non-combustible waste includes ceramic ware (teacups, plates, flowerpots, etc.), metals, glass (bottles, flower vases, mirrors, etc.), ash, and other items. Such non-combustible wastes should be removed at source from waste to be incinerated.). Our power plants will be the sum of departments and each department will work for supporting whole Power Plant. Our system starts in storage department or you can call it workshop where all of our waste will be stored.

Then after that, we are going to storage department 2 where we will sort out rubbish from bio combustible and non-bio combustible materials. After that, the rubbish goes to our main system incineration power plant. There will burn everything gain everything and continue our way .the turbogenerator part is place where we will store our electricity and basically produce electricity there. Power plant will have water balloons and many cooling systems like you can see in the map. Numbers 3a and 3b. The burnt waste is collecting in special used waste storage number 9 in the map.

The following station is biogas generator. We will produce syn gases there for following reforming to diesel and methane gases. Number 7 on the map is station-produced manure for agricultural use. And the last but not least is administrative station (number 10) where engineers will work, although you might notice that our power plant will be able to serve some gas for everyday use because we have gas station number 5a. In addition, household consumption as well as gas station. This power plant will make 100% out of rubbish.

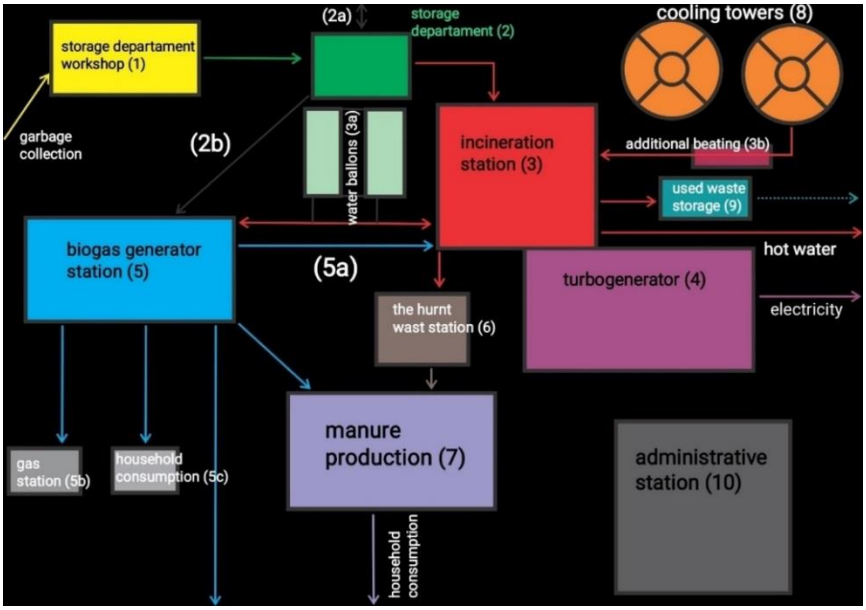

Image 1 – Power Plant

The main power plant will contain highly recommended sectors. One of the most important part is the filter parts. Almost all hazardous waste will be cleaned due to nowadays efficiency of technologies. Hazardous waste is treated almost exclusively by incineration. Incineration must be understood here as an element of comprehensive logistics for the treatment of those wastes which due to their harmful nature have to be managed separately from municipal waste. Hazardous waste is waste requiring particular supervision, which by its nature, condition or amount poses a particular hazard to health, air and/or water or is particularly explosive, or may contain or bring forth pathogens of communicable diseases. Since hazardous waste is generated for the most part in industrial production, notably the chemical industry, it is also referred to as industrial waste or industrial residue.Specific incineration technologies vary among individual plant manufacturers. An example can be seen in stoker-type incinerators. The mechanical structure of fire grating equipment differs according to waste quality, such as moisture content and LCV, as well as in the proportion of organic, paper and plastics content

To monitor flue gas, dust, HCl, SO_2, and NOx must be measured continuously. Periodical measurement of these items by specialized analytical organizations is also required. Dioxins should be measured periodically because they cannot be measured continuously. Modern incineration plants can reduce the emission of dioxins to less than the emission standard by appropriate incineration and flue gas treatment. Collection of dust using bag filters Trace amounts of dioxins can be adsorbed using activated carbon and removed by bag filters. There are three main ways to reduce NOx. These three methods can be used alone or in combination depending on the required level of reduction Catalytic denitrification: In this method, NOx in flue gas reacts with ammonia and oxygen through the action of a catalyst such as Vanadium (V) oxide/Titanium dioxide

(V_2 O5/TiO_2) and decomposes into nitrogen and water. Since this catalyst requires clean flue gas that does not contain dust at a temperature of 200°C or higher, the flue gas is reheated after passing through the bag filter and is then sent to a catalyst denitrification device. Removal efficiency is expected to be about 95 %.

As ambassadors of a modern stable development of Belarus, we want to start up this project and offer our hand to make cleaner and brighter future for future generations. That will support health organizations as well as it will help to recover energy from actually nothing. That will reduce the amount of waste in Belarus and will feed with energy big administrative cities factories. That is really profitable project because that power plant will be able to get not only electivity but some useful gases as well. Those gases could be converted into more power. Later as a waste will start to reduce in amount, the wastes could be bought from neighboring countries and sold back as well. This is an alternative solution of solving the main problem over decades. Many countries like Sweden, Japan, Germany are already using this project many years. This project doesn't cost much according to its amount of profit. Of course, there are some decent emissions that makes this project hazardous, but from another point of view, this is just better solution from landfilling and causing even more dangerous outcomes. We are really proud to present this project.

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БРИКЕТИРОВАНИЕ ОСАДКАСТОЧНЫХ ВОД

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The issue of using sewage sludge as a secondary raw material is considered. For implementation - a method of processing and disposal of sludge is proposed, as a result of which briquettes of the corresponding raw materials are obtained. The results of studies of four compositions of briquettes are presented.

При эксплуатации городских очистных сооружений Республики Беларусь, и в том числе г. Гомеля, образуется осадок сточных вод (ОСВ), являющийся источником химической и бактериологической опасности, так как в большом количестве содержат патогенную микрофлору и яйца гельминтов, токсичные органические вещества, тяжелые металлы, различные нефтепродукты. Его необходимо разместить экологически безопасно в окружающей среде.

Количество ОСВ, которое выделяется в результате очистки сточных вод на современных очистных сооружениях, составляет 2–10 % от объема поступающих вод. Ежегодно в нашей стране образуется в среднем 180–197 тысяч тонн ОСВ на сухое вещество. Из них в народном хозяйстве используется только 4–5 % от всего объема. Остальное количество осадка после обезвоживания на очистных сооружениях размещается на иловых картах. Такой способ хранения оказывает негативное влияние на окружающую среду [1].